

Amendments to the Drawings:

Applicant has amended drawing FIGS. 2, 4, and 8 and has included 5 replacement sheets containing these corrected drawing figures. The changes include adding numerals "21," "26," and "40" and changing numeral "40" to "36" in FIG. 2, adding numeral "46" to FIG. 4, and changing numeral "57" to "58" in FIG. 8. All drawings were redrawn to enhance the quality of the drawings.

REMARKS:

After entry of this Amendment, claims 1-20 are pending in the subject application. Claims 1-2, 4-6, 8-13, 15-16, and 18-20 have been amended to further distinguish the present invention over the cited references. Reconsideration of the application as amended is respectfully requested.

The Examiner objected to the drawings because the drawings fail to comply with 37 C.F.R. § 1.84(p)(5), as they do not include the following reference signs mentioned in the description: “21,” “26,” “36” (on page 4), “40,” “42,” “44,” which should be “38” (on page 5), and “34,” which should be “24” (on pages 9 and 10).

In response thereto, Applicant has submitted replacement drawings with the numerals “21,” “26,” and “40” added to FIG. 2. In addition, the numeral “46” in FIG. 2 has been changed to the numeral “36,” and the numeral “57” in FIG. 8 has been changed to the numeral “58.” Numeral “46” has been added to FIG. 4. The additions and edition of the above-noted numerals is consistent with the description in the specification of the subject application, and therefore, such additions and edition do not constitute new matter. The remaining objected-to numerals have been edited in the specification to be consistent with the drawings. For instance, the numeral “42” on page 5 of the specification has been struck. Numeral “44” on page 5 of the specification has been changed to numeral “38.” The numerals “34” on page 10 of the specification have been changed to numeral “24.” In light of the changes to the drawings and the specification of the subject application, Applicant respectfully requests that the Examiner withdraw the objections to the drawings.

The Examiner objected to claim 2 because in line 2, words are missing after “filter element,” *e.g.*, “being.” Applicant has amended claim 2 by rewriting claim 2, and therefore, the above-noted objection to claim 2 is moot.

The Examiner rejected claims 5-6, 8-9, 15-16, and 18-19 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. The Examiner asserted that the claims are indefinite because in claims 5-6 and 8-9, it is unclear if “substantially” is meant to describe only the first end point of the range or both ends of the range. The Examiner also noted that it is unclear if Applicant equates “substantially” with “about” or “approximately.” With respect to claims 15-16 and 18-19, the Examiner asserts that it is unclear if “approximately” is meant to describe only the first end point of the range or both ends of the range.

Applicant has amended claims 5-6, 8-9, 15-16, and 18-19 by replacing the term “substantially” with the term “approximately” and adding the term “approximately” to both ends of the specified range of values claimed. Therefore, in light of the amendments, Applicant respectfully requests that the Examiner reconsider and withdraw the rejections to claims 5-6, 8-9, 15-16, and 18-19 under 35 U.S.C. § 112, second paragraph.

The Examiner rejected claims 1-2, 4, 11-12, and 14 under 35 U.S.C. § 102(e) as being anticipated by Prater, et al., United States Patent No. 6,641,742. The Examiner contends that Prater, et al. discloses a filter apparatus for filtering diesel fuel [as in claims 4 and 14] including a transparent outer housing 26, a filter element, a cover 50 covering the upper portion of the element, a relief valve 102 in the top of the element, wherein the cover is completely impervious (Col. 6, lines 64-65) [as in claim 1]. The volume of captured air is of course governed by Boyles law. The Examiner further asserted that the apparatus is configured such that upon reaching a maximum differential pressure across the filter element, the relief valve opens, causing fluid level in the housing to rise, thereby indicating the condition of the filter [as in claim 11]. The Examiner also contends that the spacing between the housing and filter cover is less at an upper portion of the housing [as in claims 2 and 12].

Applicant respectfully notes that the Prater, et al. device provides a fuel pump *downstream* from the fuel filter claimed in the patent. Thus, the fuel is drawn through the fuel filter by suction or low pressure, which means that the fuel filter system of Prater, et al. operates by vacuum or low pressure, as described in the *Present Invention* section of the Prater, et al. specification (Col. 1, lines 59-60). In operation, such low pressure or vacuum systems essentially draw the fuel through the filter, and thus, the fuel level on the outside of the filter element rises only to a level that is sufficient to supply the amount of fuel that is being drawn through the filter element.

Applicant's subject application is completely different in that it provides a fuel pump *upstream* from the fuel filter. This means that the fuel is supplied to the fuel filter under high pressure, as described in the *Background of the Invention* section of the subject application and the second paragraph of the *Description of the Preferred Embodiment* section of the subject application. Under high pressure applications, the fuel enters the housing at a faster rate than the fuel can pass through the filter element, and therefore, the level of fuel will immediately rise to the top unless a sufficient amount of pressure is maintained at the upper portion of the housing to stop the fluid from rising to the top. Of course, if the fuel level is allowed to rise to the top of the housing, then the fuel level cannot be utilized as an indication of the condition of the filter element.

In order to maintain the appropriate pressure in the housing and maintain the fuel level at an appropriate level to be used as an indicator as to the condition of the filter element in a high-pressure application, the spacing between the cover of the housing and the cover of the filter element is critical. The criticality of the spacing is described in several locations of Applicant's subject application. Thus, the spacing between the cover of the housing and the cover of the filter element must be relatively small such that the air or gas that is forced to the top of the housing upon the entry of the fuel into the housing will create a sufficient amount of pressure to maintain the fuel level at an appropriate level to indicate the condition of the filter element. Applicant has amended its claims to specify that the fluid entering the housing is under high pressure and that the spacing or volume of

space at the upper portion of the housing between the outer cover and the cover of the filter element is relatively small with respect to the spacing or volume of space between the outer cover and the cover of the filter element at the bottom of the housing. These claim limitations are distinct from Prater, et al. in that Prater, et al. provides a low pressure or vacuum-type fuel system, wherein the spacing at the bottom of the housing is not significantly different from the spacing at the top of the housing. Although the housing in Prater, et al. appears to be tapered from the bottom to the top of the housing, the taper is slight and would not create the difference in volume that would create a sufficient amount of pressure to maintain an appropriate level of fuel in a high-pressure application. Prater, et al. provides no discussion or teaching as to the criticality of the spacing between the outer cover of the housing and the cover of the filter element because spacing is simply not critical in a low-pressure or vacuum fuel filter system because the level of fuel in such a system is independent of the spacing provided between the outer cover of the housing and the cover of the filter element. Therefore, in light of these distinctions, Applicant respectfully requests that the Examiner reconsider and withdraw the rejections to claims 1-2, 4, 11-12, and 14 under 35 U.S.C. § 102(e) in light of Prater, et al.

The Examiner rejected claims 1, 4, 7, 11, 14, and 17 under 35 U.S.C. § 102(e) as being clearly anticipated by Smith, et al., United States Patent No. 6,841,065.

Applicant respectfully notes that the Smith, et al. reference is similar to Prater, et al. in that the Smith, et al. reference is a low-pressure or vacuum fuel filter system, wherein the fuel level is independent of the amount of space provided between the fuel filter cover and the cover of the filter element. As seen in the drawings of Smith, et al., the spacing provided between the outer cover of the housing and the cover of the filter element is much greater at the top of the housing than at the bottom of the housing. Thus, in a high-pressure application, a sufficient amount of pressure can not be generated in the Smith, et al. device in order to maintain the fuel level at a level wherein the fuel level would indicate the condition of the filter element. Therefore, in light of the amendments to the

claims, the Smith, et al. reference does not anticipate the claims of the subject application.

Therefore, Applicant respectfully requests that the Examiner reconsider and withdraw the rejections to claims 1, 4, 7, 11, 14, and 17 under 35 U.S.C. § 102(e) in light of Smith, et al.

The Examiner rejected claims 3 and 13 under 35 U.S.C. § 103(a) as being unpatentable over Prater, et al., in view of Jiang, et al., United States Patent No. 6,939,464. The Examiner contends that Jiang, et al. teaches ribs on the outer surface of his housing cover [as in claims 3 and 13]. The Examiner concluded that it would have been obvious to one ordinarily skilled in the art at the time of the invention to provide such ribs on the outer housing surface of Prater, et al., since such would increase friction when producing a rotation motion to remove or replace the cover. The covers of both Prater, et al. and Jiang, et al. include threads.

Applicant respectfully notes that the ribs shown in Jiang, et al. are formed on a “cap member 32” of the device. The cap member 32 is threaded onto the housing 23, which houses the filter element and the fluid. Thus, Jiang, et al. does not teach structural support ribs on the housing 23.

Applicant’s subject application discloses integral structural ribs formed on the outer cover of the housing. The outer cover of the housing of the subject application houses the filter element and the fuel contained within the fuel filter assembly. The structural ribs on the cover of the housing of the subject application are designed to strengthen the outer cover so as to support the high pressure of the fluid that is supplied by the fuel pump upstream of the fuel filter assembly. Thus, claims 3 and 13 of the subject application call for the outer cover of the housing to have integral structural ribs whereas Jiang, et al. teaches ribs on the cap of the housing. Therefore, Jiang, et al. does not teach structural ribs formed on the outer cover of the housing. In light of these distinctions, Applicant respectfully requests that the Examiner reconsider and withdraw the rejections to claims 3 and 13 under 35 U.S.C. § 103(a) in light of Prater, et al. in view of Jiang, et al., as the cited references do not disclose, teach, nor suggest the subject matter defined in claims 3 and 13.

The Examiner rejected claims 10 and 20 under 35 U.S.C. § 103(a) as being unpatentable over Prater, et al. in view of Robinson, et al., United States Patent No. 6,039,030. The Examiner asserted that the claims have the limitation of a thermocouple coupled to the relief valve. The Examiner contends that Robinson, et al. teaches a shape memory alloy thermocouple spring for affecting the control of a valve in response to temperature [as in claims 10 and 20]. The Examiner concluded that it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the spring of Robinson, et al. coupled to the relief valve of Prater, et al., since such would prevent premature indication of a clogged filter when pressure temporarily increases because of a higher viscosity of fluid flow.

Applicant respectfully notes that Robinson, et al. discloses a spring made of a shape memory alloy for regulating the flow of fuel as a function of temperature. For instance, when the temperature becomes too warm, the shape memory alloy spring expands, thereby moving the check ball and allowing more fuel to enter so as to cool off the existing fuel and prevent a vaporization situation. The device in Robinson, et al. is a fuel regulator and is not related to a diesel fuel filter assembly. In addition, the shape memory alloy is a spring combination with a check ball to regulate the amount of fuel flow.

Applicant has amended claims 10 and 20 to further specify that the thermocouple is a strip of thermal-sensitive material that is connected to the top of the filter element. In addition, claims 10 and 20 were amended to specify that the strip of thermal-sensitive material has a seal connected thereto which may close or open an aperture in the filter element. The aperture may also be opened or closed by the relief valve. However, the strip of thermal-sensitive material does not control or affect the function of the relief valve but rather simply works as an override to close the aperture in those situations where the temperatures are cold, and the viscosity of the fluid is low. Thus, the structure defined in claims 10 and 20 of the subject application is not disclosed, suggested, nor taught by Prater, et al. in view of Robinson, et al. Therefore, Applicant respectfully requests that the

Examiner reconsider and withdraw the rejection to claims 10 and 20 under 35 U.S.C. § 103(a) over Prater, et al. in view of Robinson, et al.

The Examiner rejected claims 5-6, 8-9, 15-16, and 18-19 under 35 U.S.C. § 103(a) as being unpatentable over either Prater, et al. or Smith, et al. The Examiner contends that the claims have limitations concerning pressure of the fluid and the volume of the air. The Examiner notes that it is pointed out that the pressure of the system affects the volume of air in the housing. The Examiner concluded that it would have been obvious to one of ordinary skill in the art at the time the invention that these values are a matter of optimization that depends upon the environment in which the apparatus will be used, *e.g.*, flow rate, type of fluid to be filtered, etc.

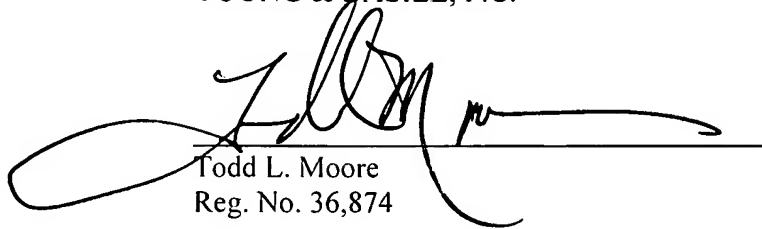
Applicant respectfully notes that, as previously discussed, the spacing between the outer cover of the housing and the cover of the filter element in a high-pressure application is critical in the described fuel filter system. The criticality of the spacing in relationship to the pressure of the fluid is described in the specification of the subject application. In those systems which utilize low pressure or vacuum applications, one skilled in the art would not have optimized the flow rates of those defined in the claims, as the use of a high-pressure fluid in such applications would lead to the fluid immediately rising to the top of the housing. This would eliminate the function of utilizing the fluid level as an indicator of the condition of the filter element. As noted in the specification of the subject application, the flow rate and the volume provided in the housing are indeed related, and therefore, Applicant has claimed such a relationship. Such relationships have not been disclosed, suggested, nor taught in the prior art. Therefore, Applicant respectfully requests that the Examiner reconsider and withdraw the rejections to claims 5-6, 8-9, 15-16, and 18-19 under 35 U.S.C. § 103(a) over either Prater, et al. or Smith, et al.

With the above amendments and discussions in mind, Applicant respectfully requests that the Examiner reconsider and withdraw the objections and rejections to the subject application and allow the subject application to proceed to issuance.

If the Examiner has any questions regarding this matter, the Examiner may contact
Applicant's Attorney at (734) 662-0270 or by electronic mail at tlmyb@aol.com.

Respectfully Submitted,

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